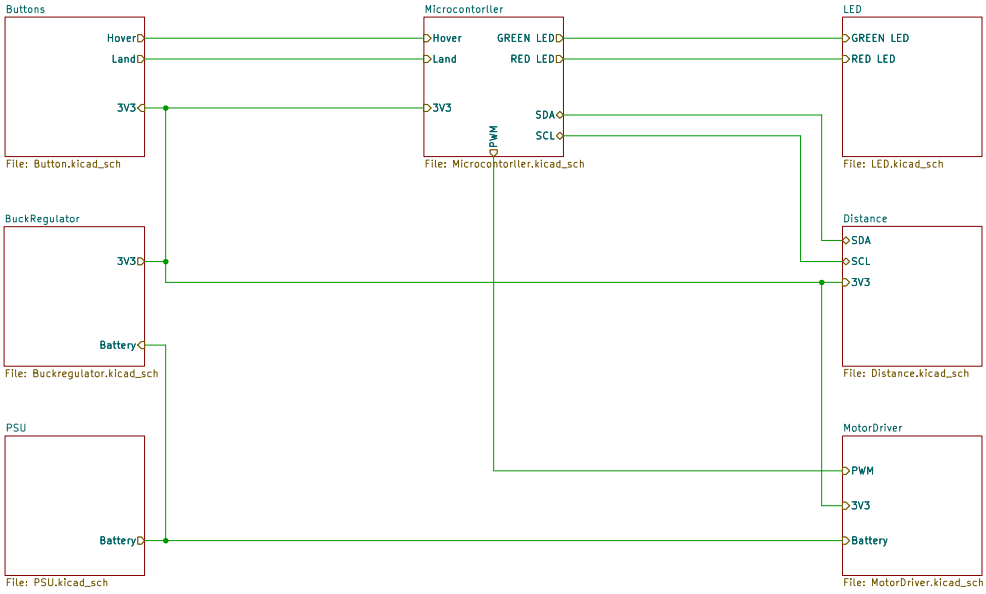

H1 MountingHole
H2 MountingHole
H3 MountingHole
H4 MountingHole
H5 MountingHole
H6 MountingHole
H7 MountingHole
H8 MountingHole

Mounting holes for the PCB onto the 3-D print

Sheet: /
File: HMS.kicad_sch

Title: AirLift – HMS

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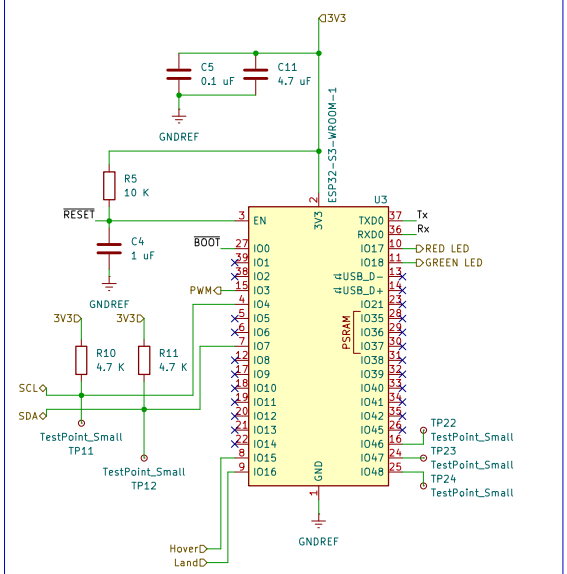
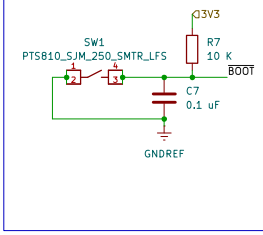
ESP32

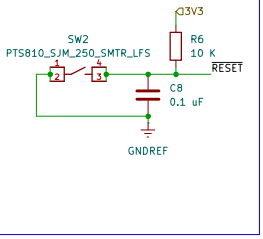


ESP32 used for its low cost and reliability and ease for change of what each pin can do (at least most of them). Connected the SDA and SCL pines with a pull up resistor. Uses 3V3 from the buck convertor.

Button for ESP32's Boot

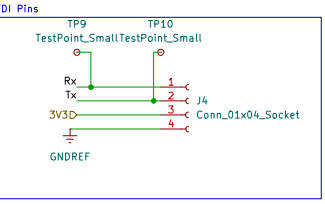


Button for ESP32's Reset



Using two buttons for the BOOT and RESET functions of the ESP32.

FTDI Pins



Used for programming of the chip. Have to be aware of the RESTART and BOOT buttons needed to begin the programming of the ESP32.

Sheet: /Microcontorller/
File: Microcontorller.kicad_sch

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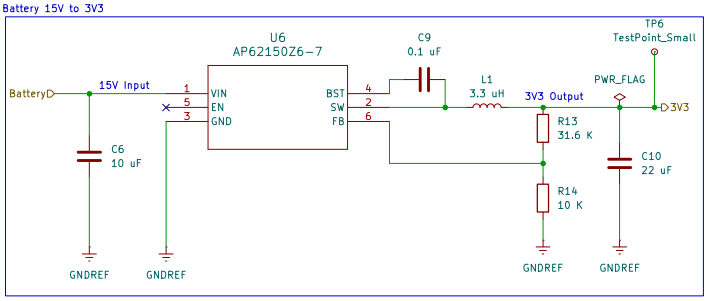
Battery 15V to 3V3



The buck regulator is efficient in steppin the voltage down from 15V to 3V3. The components around the regulator where taken from what the manufacturer suggested. The EN pin was said to be left floating for automatic startup.

Sheet: /BuckRegulator/
File: Buckregulator.kicad_sch

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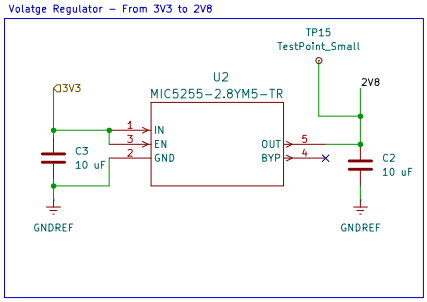
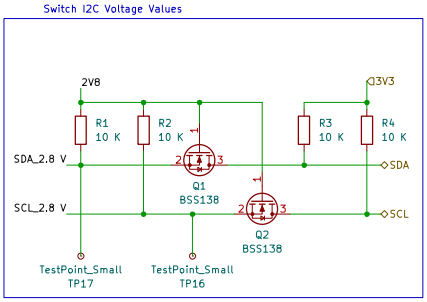
Volatge Regulator – From 3V3 to 2V8



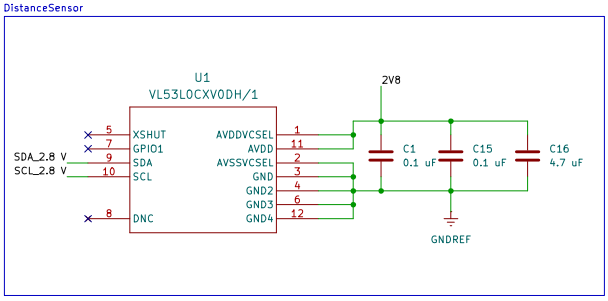
Use of a linear regulator to step down the 3V3 to 2V8 since the distance sensor uses less voltage.

Switch I2C Voltage Values



Use of MOSFETS and resistors that change the 2V8 SDA and SCL lines from the distance sensor to 3V3 used by the ESP32. The change goes both ways since both are used for sending and receiving.

DistanceSensor



The distance sensor has only its SDA and SCL lines being used for the project. Uses 2V8 as input.

Sheet: /Distance/
File: Distance.kicad_sch

Title: AirLift – HMS

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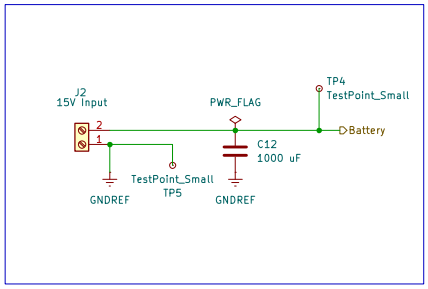
Terminal to Electronics



The terminal connects with a 15V battery. A big capacitor is used for stabilization of the current because of the MOSFETS constantly switching.

Sheet: /PSU/
File: PSU.kicad_sch

Title: AirLift – HMS

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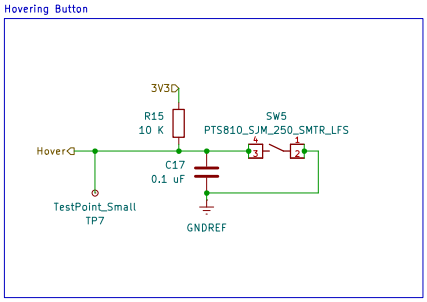
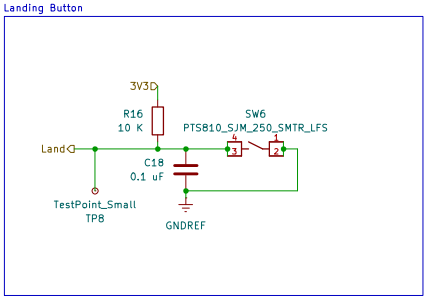
Hovering Button



Both buttons are normally HIGH and set to LOW when the buttons are pushed down. They are used as user input with protection for ESD.

Landing Button



Sheet: /Buttons/		
File: Button.kicad_sch		
Title: AirLift – HMS		Cristian D. Garcia S.
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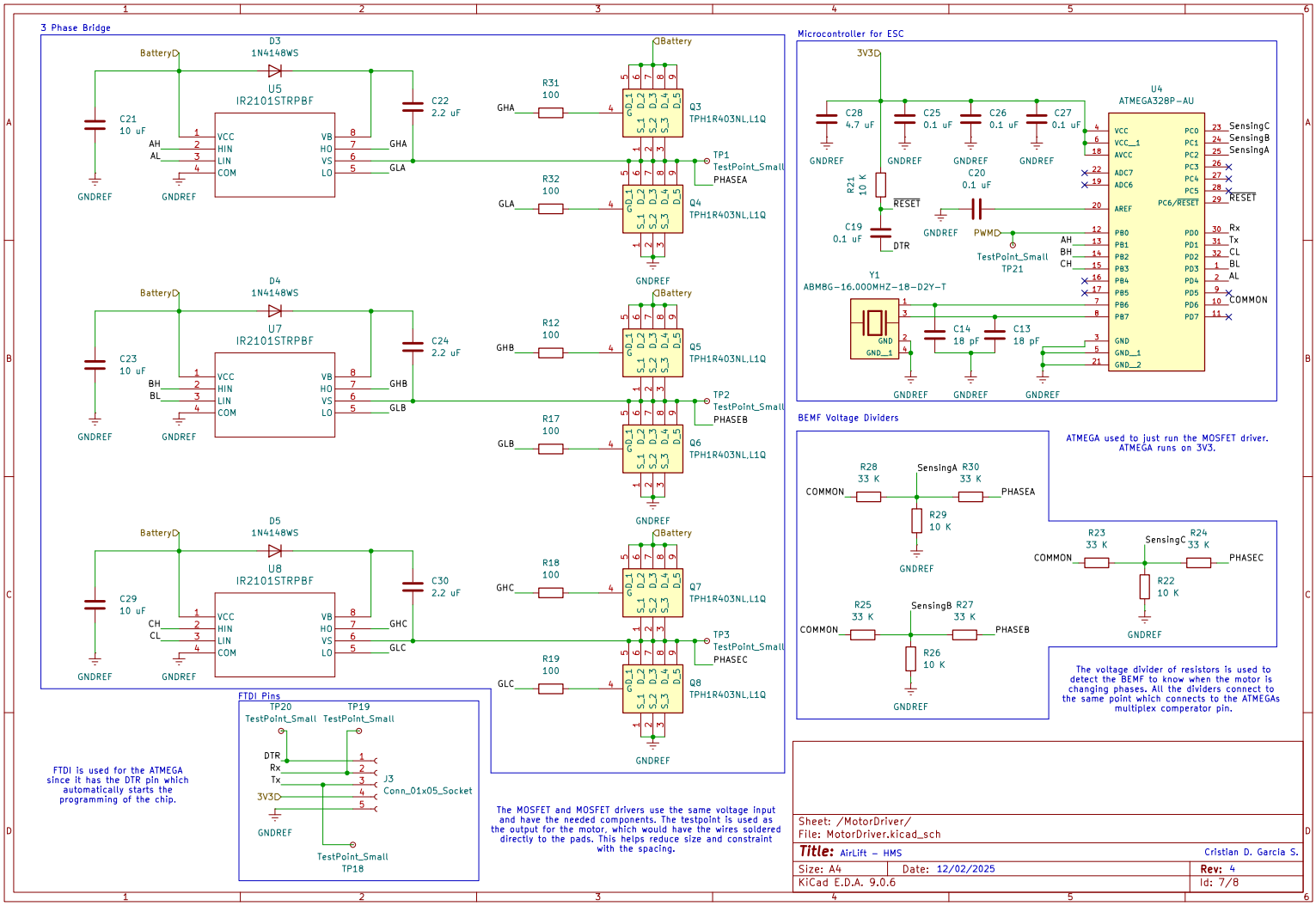
3 Phase Bridge
Microcontroller for ESC
BEMF Voltage Dividers
FTDI Pins
ATMEGA used to just run the MOSFET driver. ATMEGA runs on 3V3.
FTDI is used for the ATMEGA since it has the DTR pin which automatically starts the programming of the chip.
The MOSFET and MOSFET drivers use the same voltage input and have the needed components. The testpoint is used as the output for the motor, which would have the wires soldered directly to the pads. This helps reduce size and constraint with the spacing.
The voltage divider of resistors is used to detect the BEMF to know when the motor is changing phases. All the dividers connect to the same point which connects to the ATMEGAs multiplex comparator pin.
Sheet: /MotorDriver/
File: MotorDriver.kicad_sch
Title: AirLift - HMS
Cristian D. Garcia S.
Size: A4
Date: 12/02/2025
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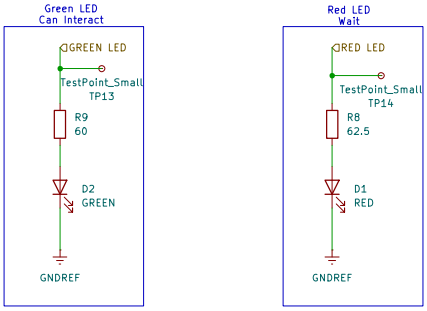

Use of two LEDs as user interface of the state of the drone.
The resistors have values so they have the same amount of current
going through both of them.

Sheet: /LED/		
File: LED.kicad_sch		
Title: AirLift – HMS		Cristian D. Garcia S.
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